

Guaranteed Technical Parameters (1Ph 5-30 Amp Meter)

Sl. No.	Particulars	Final approved GTP from MGVCIL
1	Name of manufacturer	Ok
2	Type, name and model	1 Phase 2 Wire Smart Meter, Model shall be specified by respective Meter Manufacturer
3	Standard Applicable	IS:16444-Part1 upto date.
4	Rating	
(i)	Accuracy Class	Class 1.0 as per IS:16444-Part 1 for Active Energy
(ii)	Rated Voltage	240V (+20% -40%)
(iii)	Rated current	As per requirement (10-60A)/ (5-30A)
(iv)	Rated frequency	50 Hz $\pm$ 5%
(v)	Power factor	0 lag - unity - 0 lead
(vi)	Shall work within accuracy up to max. loading	As per IS 16444 requirement (i.e. I _{max}). It shall be I _{max} .
(vii)	Category	UC1 as per IS:16444-Part1.
(viii)	Limits of Error	As per IS:16444-Part 1 with latest amendments
5	Continuous current	As Per Requirement
6	Short time over current for one half cycle at rated frequency	As Per Requirement
7	Starting current at which meter starts & continue registration	0.2 % of Ib at rated voltage and unity power factor
8	Power Consumption	
(a)	Current circuit at rated current	As per IS:16444-Part 1 with latest amendments
(b)	Voltage circuit at rated current	As per IS:16444-Part 1 with latest amendments
9	Internal diameter of Terminal Hole	It shall be 4-6mm for 1 Ph 5-30Amp and 8.5 mm for 3 Ph 10-60-Amp WHC Meter. Please confirm.
10	Centre to Centre clearances between adjacent terminals	Complies as per IS:16444-Part 1
11	Transducers	
(i)	Input	Combination of CT and shunt
(ii)	Output	Digital
12	Type of display	LCD with Backlit
(i)	Operation suitability	LCD suitable for operation up to 80°C
(ii)	No. of Digits	7 including decimal digit (6+1)
(iii)	Size of Numerals	10mm x 5 mm
13	Display Details	As per IS 16444 Part-1
13.1	Auto Display	As per display parameter sheet
(i)	Cumulative active energy	It shall be Total cumulative active energy(i.e. Fundamental plus Harmonics energy) As per Display parameter sheet
(ii)	Maximum demand of month	It shall be Total maximum demand of month (i.e. Fundamental plus Harmonics energy). As per Display parameter sheet
13.2	Push button mode	As per SBD Technical Specification
14 (i)	Reading during power-off condition	Provided through internal primary battery
(ii)	Type of arrangement made to display in power off condition	Push button activated display for power off condition
15	Whether meter is provided with optical port for data downloading	Optical Port Provided on the meter front for data downloading.
16	Battery Backup	1) As per cl. 6.6 of IS 16444, The non-volatile memory shall support retention period of 10 years. 2) Meter provided with separate battery backup for RTC and for display in case of power failure. Meter life cycle is guaranteed for 10 years, so every component is also covered under this.
17	Fixing Arrangement	
(i)	Fixing of meter	One keyhole at top and two circular holes at the bottom
(ii)	Sealing of meter cover to Base	Provision of Sealing for Meter Base to Cover is different from OEM to OEM. However all the Meter OEM's shall provide provision for minimum of 2 no. seals for sealing of Meter Base to Cover. This is pertinent mention here that, as per IS, The meter Base & cover shall be ultrasonically welded / Chemically welded or other suitable bonding technology and it will not be possible to remove the cover from the base without evidence of damage. Void Seals requirement - As Complied by PESL
18	Calibration LED and other LED/Icon	The LED and LCD requirements shall be Complied as per cl.6.7 of IS 16444 The LED and LCD requirements shall be Complied as per cl.6.7 of IS 16444
19	Electromagnetic compatibility (EMC/EMI severity level)	As per IS:16444-Part 1
20	Effect on accuracy of external electromagnetic interference of electrical discharge	As per IS:16444-Part 1
21	Effect on accuracy of external magnetic field	The requirements of tests to be conducted during FAT shall be complied with as per IS 16444. This requirement shall be complied as per cl.6.12 of IS 16444.
22	Ref. Temperature	27°C
23	Temperature range of operation	As per cl. No. 6.9 of IS 16444 (i.e.0 to 55 deg.C).
24	Drift in accuracy of measurement with time	No drift in accuracy of measurement with time
25	Fixing arrangement of name plate	The meter shall have name plate beneath the meter cover such that the name plate cannot be accessed without opening the meter cover and without breaking the seals of the meter cover and the name plate shall be marked indelibly. The name plate marking shall not fade with lapse of time. The basic marking on the meter nameplate shall be as under : -Manufacturer's name and trade mark - Type designation - Serial number (Given by MGVCIL) - Month and Year of manufacture - Reference voltage - Rated & Maximum Current - Principal units of measurements (KWH) - Meter constant (imp/kWh) - 'BIS' Mark (Applicable for Indian meter manufacturers only) - Accuracy Class of meter (class-1.0). - Purchase Order No. & date - Guarantee period : -Property of Madhya Gujarat Vij Co. Ltd. (MGVCIL) -Bar Code identification shall contain details of (i) The make , (ii) Sr no and (iii)Model/type
26	Type of body	The meter shall be projection type and dust and moisture proof. The meter base & cover shall be made out of unbreakable, high grade, fire resistant, reinforced Polycarbonate material so as to give it tough and non breakable qualities. The meter body shall be type tested for IP 51 degree of protection as per IS 12063 against ingress of dust, moisture & vermin.
27	Calibration	Software calibrated at factory. No provision for calibration at site.
28	Maximum Demand	kW & kVA, Block Window Type
29	Load Survey	Integration period – 30min (Shall be configurable for 15 min, 30 min or 60 min as per IS:15959-Part2)
30	Load switch	As per IS:16444-Part 1
31	Measuring Elements	Meter shall have two measuring elements – one in phase and other in neutral path

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32	Anti-Tamper features	AS complied by PESL. The meter shall indicate 28 nos. of Tamper conditions illustrated in the attached drawing. The meter shall record all energy consumed accurately (i.e. accuracy should be +/- 1.0 %) under 1 to 21 tamper conditions. Testing of tamper conditions no. 22 to 28 and injection of chopped A.C./Pulsating D.C. in neutral will be done at 240 V, actual current & UPF and for these conditions , the accuracy of meter should be (+) 6% to (-) 4% . Also for the tamper condition no 21 the difference of Phase current & neutral current should be preferably 5% , however bidder may specifically quote their logic for this condition. The error of the meter should be measured only after logging of the tamper condition. For all above tamper conditions, meter display should be continuously ON and output pulse should be available.
33	Disconnection/Reconnection Mechanism	As per IS:16444-Part 1
34	Connect/Disconnect Indication	As per IS:16444-Part 1
35	Communication and Communication Protocol	Communication technology as per requirement, with communication protocol as per IS 16444 Part 1
36	Plug-in Communication Module	The Smart Meters shall have a dedicated, sealable slot for accommodating plug-in type bi - directional communication module which shall integrate the respective communication technology (RF/ Cellular) with the Smart Meters, leading to easy adaptability for network interfaces (WAN/NAN). The Plug-In module shall be field swappable/ replaceable.
37	First Breath (Power on) and Last gasp (Power off) condition detection and communication to HES	As per IS:16444-Part 1
38	RTC & time synchronization	As per IS:16444-Part 1 and IS:15959 (Part 1 & 2)
39	Remote Firmware Upgrade	As per IS:15959-Part2
40	Data Retention	As per IS:16444-Part 1 and IS:15959 (Part 1 & 2)
41	Meter Constant	3200 imp/kWh
42	Relative humidity	This requirement shall be complied with as per cl. No. 6.9 of IS 16444.
43	Running with no load and at 115 percentage voltage ;	This requirement shall be complied with as per cl. No. 6.12 of IS 16444.
44	Type of material used	As follows
44.1	a) Meter cover -Material	This requirement shall be complied with as per cl. No. 6.0 of IS 16444. However in IS High Grade polycarbonate or equivalent is envisaged and same is being provided
44.2	. ; b) Meter base-Material ; .	--do--
44.3	. ; c) Terminal Block â€œ Material ;	This requirement shall be complied with as per cl. No. 6.0 of IS 16444.
44.4	. ; d) Terminal cover - Material ;	--do--
44.5	. ; e) Screw I) Material ; Nickle Plated â€œ Brass	--do--
44.6	. e) Screw ; ii) Size ; M-4 with head of 5mm dia.	--do--
45	Center to Center clearance between adjacent terminals ;	--do--
46	Testing Facility	Manufacturer must have testing facility for all acceptance test as per IS 16444 and tamper conditions (as per list) test at his works. Meter Manufacturer Should have in-house NABL or ISO/ IEC -17025 accredited Laboratory
47	a. Whether offered meter type tested as per IS:16444 or IEC 62053-21 and as per the requirement of specification. (indicate name of laboratory / Ref. of report no. and date. b. Certificate for (DC influence test of 0.5 tesla and total energy test i.e. fundamental + harmonics) is enclosed or not?	This requirement shall be complied with as per IS 16444.
48	Guarantee period	10yrs
49	BIS license No. & date with its validity for ISI certification mark on meter	This requirement shall be complied with as per cl. No. 6.8 of IS 16444.
50	Sealing of meter	The body seals of meter shall be transparent and with patented design. It shall be provided with two security seal (Void seal) as per specifications attached.
51	Default mode	Prepaid mode provided
52	Default Metering Mode	Unidirectional Mode
53	Surge Impulse	4 kV
54	Impulse Voltage Test	This requirement shall be complied with as per cl. 6.10.6 of IS 16444. Any requirement beyond the IS provisions shall not be complied with.
55	Meter should be capable withstand 440 V across terminals continuously.	This requirement is not as per IS. However, meter shall comply with the Insulation requirements as per IS 16444.
56	TOD Time Zone	Only one TOD provided as per past experience with Gujarat. 00:00 - 24:00
57	Extra Tamper	This requirement shall be complied with as per IS 15959 part 2. Any requirement beyond the IS provisions shall not be complied with.
58		Meter complied to IP 51
59	Connection diagram inside terminal cover	As per IS 16444 Part-1
60	BIS licence ; To be submitted-BIS NO and date of validation to be mentioned.	This requirement shall be complied with as per cl. No. 6.8 of IS 16444.