

Guaranteed Technical Parameters (3Ph WHC) 10-60 Amp Meter)

Sl. No.	Particulars	Final approved GTP from MGVCL
1	Name of manufacturer	Ok
2	Type (Model No) name & number	3 Phase 4 Wire Smart Meter, Model shall be specified by respective Meter Manufacturer
3	Standard Applicable	IS:16444-Part1 amended upto date
4	Rating	Ib 5 Amp
(a)	Accuracy Class	Class 1.0 as per IS:16444-Part 1.
(b)	Rated Voltage	3x240V Phase to Neutral (70%to120%)
(c)	Rated Current	Ib=10Amp, Imax=60Amp (10-60A)
(d)	Rated Frequency	50Hz $\pm$ 5%
(e)	Power Factor	Zero (lag) to Unity to Zero (lead)
(f)	Meter Constant (Imp/KWH)	1600imp/kWh
(g)	Category	UC1 as per IS:16444-Part1
(h)	Limits of Error	As per IS:16444-Part 1 with latest amendments
5	Maximum Continuous Current(A)	60Amp
6	Continuous Current Rating of	It shall be as per IS 16444 requirement (i.e. I _{max}). It shall be I _{max} .
	Terminals for two hours	It shall be as per IS 16444 requirement (i.e. I _{max}). It shall be I _{max} .
7	Running under No Load	No creeping
8	Short time Over Current	30 I _{max}
9	Starting Current	0.2% of I _b
10	Power loss at rated frequency & Reference temperature	
(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
11	Maximum Demand	
(a)	Parameter	kW & kVA, Block Window Type
(b)	Integration Period	30min/15 min (Programmable)
(c)	Resetting Options	As per IS:16444-Part 1 with latest amendments
12	Type of material used	
(a)	Base	This requirement shall be complied with as per cl. No. 6.0 of IS 16444. However in TS High Grade polycarbonate or equivalent is envisaged and same is being provided
(b)	Meter cover	--do--
(c)	Terminal Block	This requirement shall be complied with as per cl. No. 6.0 of IS 16444.
(d)	Terminal cover	--do--
(e)	Screw	
	(i)Material	This requirement shall be complied with as per cl. No. 6.0 of IS 16444.
	(ii)Size	--do--
13	Internal diameter of Terminal Hole	8.5 mm for 3 Ph 10-60-Amp WHC Meter. Please confirm.
14	Centre to Centre clearances between Adjacent terminals	This requirement shall be complied with as per cl. No. 6.0 of IS 16444.
15	Type of Register	
(a)	No. of Digits	7 complete digit and 1 decimal digit
(b)	Size of Numerals	The LED and LCD requirements shall be Complied as per cl.6.7 of IS 16444. However Size of Numerals for LED & LCD shall vary from OEM to OEM.
16	Reading on power off condition	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	Type of undetectable terminal cover	Hinged terminal cover provided
18	Tamper conditions	The meter shall preferably comply the tamper conditions as per <u>Annexure-II(attached herewith)</u>
19	Calibration LED and other LED/Icon	(1) The meter shall have suitable blinking LED test out put accessible from the front. (2) The test out put should be suitable for use with sensing probe used with test bench or Electronic Reference Standard Meter. (3) The test output should also work as operating indicator for meter. (4) Output device shall be suitable for optical scanning for test purpose. All other indicators provided on LCD.
20	Electromagnetic compatibility (EMC/EMI severity level)	Complied as per IS:16444-Part 1
21	Effect on accuracy of external electromagnetic interference of electrical discharge	Complied as per IS:16444-Part 1

Sl. No.	Particulars	Final approved GTP from MGVCL
22	Effect on accuracy of external magnetic field	This requirement shall be complied as per cl.6.12 of IS 16444. The requirements of tests to be conducted during FAT shall be complied with as per IS 16444.
23	Ref. Temperature	27 °c
24	Temperature range of operation	-10 °C to 60 °C
25	Drift in accuracy of measurement with time	No drift in accuracy in measurement with time.
26	Fixing arrangement of name plate	The meter terminal marking and mounting arrangement shall be as per Indian Standard/IEC. The marking on every meter shall be in accordance with IS 16444/Part-1 . 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 ☐ Number of phases and wires ☐ Serial number (Given by MGVCL) ☐ Month and Year of manufacture ☐ Reference voltage ☐ Rated Current ☐ Principal unit(s) of measurement ☐ Meter constant (imp/kWh) ☐ 'BIS' Mark ☐ Accuracy Class of meter (class-1.0) ☐ "Property of MGVCL." ☐ Purchase Order No. & date ☐ Guarantee period ☐ Category of the meter and corresponding IS 15959 : 2011 Only one meter Sr. no which is provided by the MGVCL must be on name plate. Unique procedure of Meter Sr. no. having Alfa-numeric character will be decided by MGVCL and will be given at the time of placing Order so that 7 digit numeric part will appear on meter display and Alfa-numeric part will appear in BCS (MRI data) as well as on name plate.
27	Type of body	Projection type
28	Calibration	Software calibrated at factory. No provision for calibration at site.
29	Maximum Demand	kW & kVA, Block Window Type
30	Load Survey	This requirement shall be complied with as per IS 15959 part 2.
31	Load switch	As per IS:16444-Part 1
32	Measuring Elements	Meter will have four measuring elements – three in phase and other in neutral path
33	Anti-Tamper features	The meter shall continue working under tamper conditions as defined in IS 15959 Part 2 and would log the event and send alarm at Head End System after detection of the defined tamper features as per as per IS:15959-Part2.
34	Disconnection/Reconnection Mechanism	As per IS:16444-Part 1
35	Connect/Disconnect Indication	As per IS:16444-Part1, Icon on LCD provided.
36	Communication and Communication Protocol	Communication technology as per requirement, with communication protocol as per IS 16444 Part 1
37	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.
38	First Breath (Power on) and Last gasp (Power off) condition detection and communication to HES	
39	RTC & time synchronization	
40	Remote Firmware Upgrade	
41	Meter Constant	As per IS 15959 (Part 2): 2016
42	Impulse Voltage	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.
43	Display parameters	As per IS 16444 Part-1
44	No.s of seals to be provided	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 TS, 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
45	Connection diagram inside terminal cover	As per IS 16444 Part-1
46	Communication port	This requirement shall be complied with as per IS 15959 part 1.
47	Real Time clock with back up battery	As per IS 16444 part1 and IS 15959 Part 1 and 2
48	Life of battery	10 Yrs

Sl. No.	Particulars	Final approved GTP from MGVCL
49	Memory capacity(kB)	1MBit Minimum.
50	Salient Features	As follows
50.1	Meter shall work accurately irrespective of phase sequence of the main supply	Ok
50.2	Meter shall remain powered up and functional in presence of two wires	Ok
50.3	Meter shall record accurately even if neutral is disconnected	This requirement shall be complied with as per IS 16444 & 15959 part 2.
50.4	Meter shall record correct energy in case of current reversal of one or more phases	Ok
50.5	Measurement by meter shall not get influenced by injection of AC voltage/ chopped signal/DC signal and harmonics	Ok
50.6	The meter shall register accurate energy even if load is drawn partially or fully through local earth	Ok
50.7	Meter should record and display MD in KW as well as KVA for 30 minute integration period	Ok
50.8	Meter should record and display TOD energy. However, TOD MD in MRI report should be available	Ok
51	MD reset ; Auto as well as manual.(Separate/exclusive button to be provided for MD reset)	Ok
52	Self diagnostic feature	Ok
53	Load Survey in graphical as well as in tabular form ; Minimum RTC, KWH and KVAH parameters (energy and demand) for 180 days with 30 minute integration period in FIFO Manner.	Ok
54	Snap Shot Facility ; Voltage, current, power factor, KWH with date and time of occurrence and restoration of tamper event.	Ok
55	No of tamper events; Min 400	This requirement shall be complied with as per IS 15959 part 1 & 2.
56	TESTS Routine tests	This requirement shall be complied with as per IS 16444.
57	Acceptance tests ;	This requirement shall be complied with as per IS 16444.
58	Type tests ; To be submitted	This requirement shall be complied with as per IS 16444.
59	Testing facilities ;	This requirement shall be complied with as per TS which is "Meter Manufacturer Should have in-house NABL or ISO/ IEC -17025 accredited Laboratory
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.