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GUARANTEED TECHNICAL PARTICULARS FOR DLMS COMPLIANT 3 PHASE 4 WIRE AC LTCT OPERATED STATIC TRIVECTOR ENERGY METERS of Category -A

S.N.	Particulars	Minimum requirement	Offered
1	Name of manufacturer	To be mentioned	Genus Power Infrastructure Ltd Works: Jaipur / Haridwar
2	Model	To specify	Three Phase Four Wire-03C
3	Standard Applicable	IS:14697/1999, CBIP 325 & and Indian companion specification Doc: IS15959 with latest amendments.	IS:14697/1999, CBIP 325 & and Indian companion specification Doc: IS15959 with latest amendments.
4	Rating <i>category</i>		<i>'A'</i>
	(i) Accuracy class	Class -0.5S	Class -0.5S ✓
	(ii) Rated voltage	3X240 V Ph to N	3X240 V Ph to N ✓
	(iii) Voltage variation	+ 20% to -30% of Vref	Yes, Comply ✓
	(iv) Rated current	Ib-5 Amps, I _{max} -200% of Ib	Ib-5 Amps, I _{max} -200% of Ib ✓
	(v) Rated frequency	50 Hz ± 5%	50 Hz ± 5% ✓
	(vi) Power factor	0° lag to unity to 0° lead	0° lag to unity to 0° lead ✓
	(vii) Max. loading to work within accuracy	200 % of Ib	200 % of Ib ✓
	(viii)Magnetic immunity	As per Standard	As per CBIP 325 ✓
5	(i) Continuous current rating	5 Amps	5 Amps ✓
	(ii) Running with no load & 115% rated voltage	Should not produce more than one output pulse/count	Comply ✓
6	Short time over current	20 I _{max} for 0.5 sec	As per IS ✓
7	Meter shall start and continue to register at current (unity PF)	0.1 % of Ib	0.1 % of Ib ✓
8	Power loss at rated frequency & reference temperature		
	(i) Current circuit at rated current per phase	As per IS	Less than 1.5W & 8VA ✓
	(ii) Voltage circuit at rated current per phase	As per IS	Less than 1VA ✓
9	Momentary over voltage	As per relevant standard	As per relevant IS ✓
10	Communication port	As per Indian companion specification Doc: IS15959 with latest amendments	One optical port and other hardware RS232 port (As per Indian companion specification Doc: IS15959 with latest amendments)
11	Life of RTC Battery	Please specify	10 Years (min.) ✓
12	Type of material used		
	(a) Material		
	(i) Base	High impact strength flame retardant, UV stabilised polycarbonate/ Engineering plastic.	High impact strength flame retardant, UV stabilised polycarbonate/ Engineering plastic.



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S.N.	Particulars	Minimum requirement	Offered
	(ii) Terminal block	High impact strength flame retardant UV stabilised	PBT
	(iii) Meter cover	High impact strength flame retardant UV stabilised transparent poly carbonate	Transparent Polycarbonate <i>(IP-51)</i> <i>Must comply degree of protection IP-51</i>
	(iv) Terminal cover	High impact strength flame retardant UV stabilised	Polycarbonate
	(v) Screw	Nickel plated Brass	Nickel plated Brass
(b) Thickness			
	(i) Base	Not less than 2.0 mm	2.0mm(minimum) ✓
	(ii) Terminal block	2.0 ± 0.25 mm	2.0 ± 0.25 mm ✓
	(iii) Meter cover	Not less than 2.0 mm	2.0mm (minimum)
	(iv) Terminal cover	Not less than 2.0 mm	2.0mm (minimum)
	(v) Screw size	M 5 x 8.5 mm	M 5 x 8.5 mm
13	Size of Terminal Hole	5.5 mm or suitable to accommodate desired size of wire	5.0 mm (minimum)
14.	Fixing/ Sealing arrangement		
	(i) Fixing of meter	3 fixing holes (one at top and two at bottom terminal block)	Yes, Provided
	(ii) Sealing of meter cover to Base	At least 2 sealing screws will be provided for Base to top sealing	Yes, provision for 2 seals ✓
	(iii) Sealing of terminal cover	Provision for Two seals	Yes, Two seals provision
	(iv) MD Button	Provision for One seal	Yes, One seal provision
	(v) communication port	Provision for One seal	Yes, One seal provision
15	Non Volatile Memory	Memory capable of storing & retaining all the data required to be stored, without the help of any power source or battery back up	Comply for minimum period of 6 months.



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S.N.	Particulars	Minimum requirement	Offered
16	Type of display	7 segment LCD	LCD ✓
	(i) No. of Digits display	7	7 digits(6+1) ✓
	(ii) Character size of display	10 x 5 mm	10x5 mm
17	Display parameters/ Sequences(display should be self explanatory)		
(a)	Auto scroll Mode	As per IS15959	As per IS15959 & attached display sheet
(b)	Push button Mode	As per IS15959	As per IS15959 & attached display sheet
(c)	Programmable Optional Requirements:	As per IS15959	As per IS15959 with latest amendment ✓
18	(i) Reading in power off condition	Meter shall be able to display/download reading.	Meter shall be able to display reading through internal battery ✓
	(ii) Type of arrangement made to display in power off condition	To be explained	Internal battery provided operated by push button
19	Maximum Demand Registration	As per specification	Block MD Method, 15/30 minutes integration period as per DLMS standard.
20	Billing Registers/ MD Reset: It should be possible to reset MD by the following options:	Each register shall have an associated billing register. When a billing operation occurs, the contents of the rate registers shall be transferred to their billing equivalents.	Yes, Billing parameters & 6 months billing history will be as per IS15959 with latest amendment for CAT-A meters
(i)	Communication driven reset	As per IS15959	As per IS15959 with latest amendment
(ii)	Local push button	As per IS15959	Yes, MD reset button will be provided For MD reset
(iii)	Auto reset	As per IS15959	Auto reset will be at 00:00 hrs on last day of every month.
21	TOD Parameters	As per IS15959	As per IS 15959 with latest amendment
22	Load Survey	As per IS15959	60 days load survey with 30 min IP & LS parameters will be as per IS15959 with latest amendment <i>configurable to 15min.</i>
23	Base Computer Application Software	All the parameters that are defined IS15959 & Can be read through through CMRI/HHU/AMR	Yes, All the parameters that are defined IS15959 with latest amendment for Category 'A' will be available at BCS.
	TAMPER FEATURES	As per IS 15959 with latest amendments.	As per IS 15959 with latest amendments & tamper logics as per attached sheet..
24	Reverse phase sequence	Meter shall record energy accurately.	Comply
25	Size of calibration LED and colour	5/3mm Red	5mm Red
26	Electromagnetic compatibility	Should withstand severity	Yes, as per relevant IS ✓



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S.N.	Particulars	Minimum requirement	Offered ✓
	EMI/EMC severity level)	level as per IS	
27.	Relative humidity	As per relevant IS	As per relevant IS ✓
28.	Rf. temperature	27°C	27°C ✓
29.	Drift in accuracy of measurement with time	No Drift in accuracy in measurement with time	Comply ✓
30.	Fixing arrangement of name plate	Secured and indelibly marked name plate (rating plate) will be fixed to the meter under display window.	Comply ✓
31.	Approximate weight & dimensions of meter	To be mentioned	1.4 Kg +/-100gm. & Dimensions as per attached sheet.
32.	Type of body	Projection type	Projection type ✓
33.	Other parameters/features not covered in the above GTP	Shall conform to IS-14697/1999,CBIP report no.325 & as per IS15959 with its latest amendment	Shall conform to IS-14697/1999,CBIP report no.325 & as per IS15959 with its latest amendment ✓



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- * All meters should be compatible with all type of Modems.
- * There should be provision of on-demand reading and load profile from remote through Modem.
- * programmable parameters: There should be provision of programming of parameters such as TOP and Demand period (DIP) etc.

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Display Parameter

Project Code: SBQD12A

Revision No.: 01

TABLE-1: Auto Scroll Display

Sr. No.	Parameters Display	Parameters Description
		All Segment Display
1.		Auto Mode
2.		Real Date
3.		Real Time
4.		R-Phase Current (Amp)
5.		Y-Phase Current (Amp)

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Display Parameter

Project Code: SBQD12A

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6.		b	0.000	B-Phase Current (Amp)
	Tx	000 71.70	A	
7.		r	0.0	R-Phase Voltage (Volt)
	Tx	000 32.70	V	
8.		y	0.0	Y-Phase Voltage (Volt)
	Tx	000 52.70	V	
9.		b	0.0	B-Phase Voltage (Volt)
	Tx	000 72.70	V	
10.	PF	r	0.000	R-Phase Power Factor (L=Lag C=Lead)
	Tx	000 33.70	L/C	
11.	PF	y	0.000	Y-Phase Power Factor (L=Lag C=Lead)
	Tx	000 53.70	L/C	

Neutral current to be added (as) ph yed.

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12.	PF b 0.000 Tx 000 73.70 L/C	B-Phase Power Factor (L= Lag C=Lead)
13.	PF 0.000 Tx 000 13.70 L/C	Instant Net Power Factor (L= Lag C=Lead)
14.	F 00.000 Tx 000 14.70 Hz	Frequency
15.	P 0.000 Tx 000 9.70 kVA	Instant Apparent Power kVA
16.	P 0.000 Tx 000 1.70 kW	Instant Active Power kW
17.	P 0.000 Tx 000 3.70 kVAR	Instant Reactive Power kVAR



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Display Parameter

Project Code: SBQD12A

Revision No.: 01

18.			0.0	Cumulative Active Energy kwh
	Tx	000 1.8.0	kWh	
19.			0.0	Cumulative Reactive Energy Lag
	Tx	000 5.8.0	kVArh	
20.			0.0	Cumulative Reactive Energy Lead
	Tx	000 8.8.0	kVArh	
21.			0.0	Cumulative Apparent Energy kVAh
	Tx	000 9.8.0	kVAh	
22.		FC	0	Cumulative Power Failure Count
	Tx	000 96.7.0		
23.		Fd	000:00:00	Cumulative Power Failure Duration DDD:HH:MM
	Tx	000 94.91.8		

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Display Parameter

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24.	<p>EC 0</p> <p>Tx 000 94.91.0</p>	Cumulative Tamper Count
25.	<p>rSt 0</p> <p>Tx 000 0.1.0</p>	MD Reset Count
26.	<p>dAC 0</p> <p>Tx 000 96.2.0</p>	Data Alteration Count *
27.	<p>d</p> <p>dd:77:44</p> <p>Tx 000 0.9.7 BP</p>	<p>Bill Date</p> <p>CHECKED</p> <p><i>Handwritten signatures and marks</i></p>
28.	<p>0.000</p> <p>Tx 000 1.6.0 MDkW</p>	<p>AEE(P-II) EEE(P-II) ESE(P-II)</p> <p>Maximum Demand kW</p>
29.	<p>0.000</p> <p>Tx 000 9.6.0 MDkVA</p>	Maximum Demand kVA




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TABLE-2: Push Button Display

Sr. No.	Parameters Display	Parameters Description
	PUSH 000	Push Mode
1.	d dd:~:~:~ Tx 000 09.2	Real Date
2.	t HH:~:~ Tx 000 09.1	Real Time
3.	 r Tx 000 31.70 A	R-Phase Current (Amp)

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Display Parameter

Project Code: SBQD12A

Revision No.: 01

4.		4	0.000	Y-Phase Current (Amp)
	Tx	000 51.70	A	
5.		6	0.000	B-Phase Current (Amp)
	Tx	000 71.70	A	
6.		r	0.0	R-Phase Voltage (Volt)
	Tx	000 32.70	V	
7.		4	0.0	Y-Phase Voltage (Volt)
	Tx	000 52.70	V	
8.		6	0.0	B-Phase Voltage (Volt)
	Tx	000 72.70	V	
9.	PF	r	0.000	R-Phase Power Factor (L=Lag C=Lead)
	Tx	000 33.70	L/C	

Neutral current is to be added / displayed.



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Display Parameter

Project Code: SBQD12A

Revision No.: 01

10.	PF 4 0.000 Tx 000 53.70 L/C	Y-Phase Power Factor (L= Lag C=Lead)
11.	PF 6 0.000 Tx 000 73.70 L/C	B-Phase Power Factor (L= Lag C=Lead)
12.	PF 0.000 Tx 000 13.70 L/C	Instant Net Power Factor (L= Lag C=Lead)
13.	F 00.000 Tx 000 14.70 Hz	Frequency
14.	P 0.000 Tx 000 9.70 kVA	Instant Apparent Power kVA
15.	P 0.000 Tx 000 1.70 kW	Instant Active Power kW



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16.	 P	0.000	Instant Reactive Power kVAR
	Tx 000 3.7.0	kVARh	
17.		0.0	Cumulative Active Energy kwh
	Tx 000 1.8.0	kWh	
18.		0.0	Cumulative Reactive Energy Lag
	Tx 000 5.8.0	kVARh	
19.		0.0	Cumulative Reactive Energy Lead
	Tx 000 8.8.0	kVARh	
20.		0.0	Cumulative Apparent Energy kVAh
	Tx 000 9.8.0	kVAh	
21.	FC	0	Cumulative Power Failure Count
	Tx 000 96.7.0		



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Display Parameter

Project Code: SBQD12A

Revision No.: 01

22.	Fd 000:00:00 Tx 000 94.91.8	Cumulative Power Failure Duration DDD:HH:MM
23.	LC 0 Tx 000 94.91.0	Cumulative Tamper Count
24.	rSt 0 Tx 000 0.1.0	MD Reset Count
25.	dAC 0 Tx 000 96.2.0	Data Alteration Count
26.	d dd:--:-- Tx 000 0.9.7 BP	Bill Date
27.	0.000 Tx 000 1.6.0 MDkW	Maximum Demand kW



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28.	0.000 Tx 000 9.60 MDkVA	Maximum Demand kVA
29.	no Phn 1s Tx 000	Present Tamper Status-R/Y/B Phase Miss
30.	no VOLH Tx 000	Present Tamper Status Voltage High
31.	no VOLLO Tx 000	Present Tamper Status Voltage Low
32.	no UDUAb Tx 000	Present Tamper Status Voltage Unbalance
33.	no CTREU Tx 000	Present Tamper Status CT Reverse



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34.	no CTOP Tx 000	Present Tamper Status CT Open
35.	no CUUNb Tx 000	Present Tamper Status Current Unbalance
36.	no BYPS Tx 000	Present Tamper Status CT Bypass
37.	no CURH Tx 000	Present Tamper Status Current High
38.	no MAG Tx 000	Present Tamper Status Magnet Tamper
39.	no NEUD 5 Tx 000	Present Tamper Status Neutral Disturbance



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40.	<p style="text-align: center;">n0 LOPF</p> <p>Tx 000</p>	Present Tamper Status Low Power Factor
41.	<p style="text-align: center;">P5E9 ---</p> <p>Tx 000</p>	Phase Sequence



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Display Parameter

Project Code: SBQD12A

Revision No.: 01

TABLE-3: Diagnostic Mode Display

	d1 A6 000		Diagnostic MODE
1.	Hr Tx 000	0.0000 kWh	High Resolution Active Energy kwh
2.	$\frac{W}{V}$ Hr Tx 000	0.0000 kVARh	High Resolution Reactive Energy kvarh Lag
3.	$\frac{V}{W}$ Hr Tx 000	0.0000 kVARh	High Resolution Reactive Energy kvarh Lead
4.	Hr Tx 000	0.0000 kVA h	High Resolution Apparent Energy kvah

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Display Parameter

Project Code: SBQD12A

Revision No.: 01

DISPLAY MODES

Under Power ON condition

Display parameters are displayed in three different modes called Auto Scrolling Mode, Push Button Mode & Diagnostic Mode.

Auto Mode Display:

This is default display mode. Meter will continuously scroll through Auto Scroll Display Parameters (Refer TABLE-1). Each parameter will be displayed for 10 seconds.

Push Mode Display:

The auto scrolling will switch to Push Button Display after pressing the push button. Meter will continuously scroll through Push Button Display parameters (Refer TABLE-2). If Push Button not pressed for 5 min then Display will switch over to default Display.

Diagnostic Mode Display:

This mode will activate when both UP & down Switch will press continuously 1 sec & Parameters under Diagnostics mode can also be viewed by subsequent pressing of Push button. The Diagnostics mode Display will switch over to default display after 5 min OR either press both UP & down Switch for 1 Sec to switch push mode display immediately.

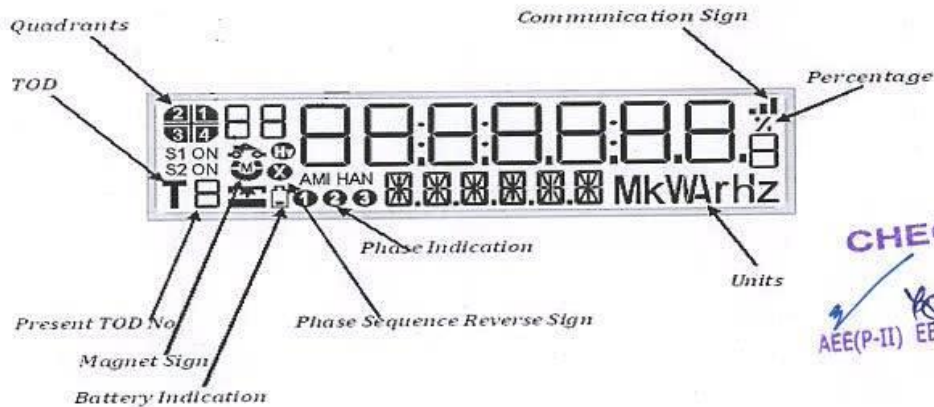
Under Power OFF condition

First press of Push Button will activate the internal battery and meter will start scrolling in Auto mode Auto Scroll parameters.

Under Top Cover Open condition

If Top cover open then 'EE OPEN' Flashing in auto mode.

LCD Glass Description:-



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Display Parameter

Project Code: SBQD12A

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Icons on LCD Glass:-

1.  Sign indicates the Instantaneous presence of Magnet Tamper.
2.  Sign indicates the communication with meter.
3.  Sign Are the voltage and current indication for R phase, Y phase and B phase, Respectively.
4. Continuous display of  shows the presence of voltage and current in respective phase.
5. Blinking of  shows presence of voltage and absence of current in the respective phase.
6. The absence of  shows the absence of voltage in respective phase.
7.  Sign indicates Phase sequence reverse.
8. **Tx** Sign indicates TOD.
9.  Sign indicates Quadrant.

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Revision History

Rev No.	Date	Revision History
00	28.09.2015	Initial
01	19.05.2021	Lag & Lead description added in PF for L & C legends

Authentication

Particulars	Prepared By	Approved By
Name	Balveer Singh	Chandan Singh
Signature	Balveer Singh	Chandan Singh
Date	19.05.2021	19.05.2021



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Sr. No.	TAMPER TYPE	OCCURANCE THRESHOLDS	RESTORE THRESHOLDS	Compartment	Persis - tence Time	
					Occ	Res
1.	Phase Miss	$V_x < 20\% \text{ of } V_{ref}$ $I_x \geq 10\% I_b$ Any other phase Voltage $\geq 60\% V_{ref}$ All phase voltage $<$ Neutral disturbance voltage limit (125%Vref) $x=r/y/b$	$V_x > 40\% V_{ref}$ Any other phase Voltage $> 60\% V_{ref}$ All phase voltage $<$ Neutral disturbance voltage limit (125%Vref) Current Ignored $x=r/y/b$	Ist	5Min	5Min
2.	Magnetic Tamper	Meter Under Magnetic Influence	Meter Not Under Magnetic Influence	Illrd	15 Sec	15 Sec
3.	Voltage unbalance	$V_{max}-V_{min} > 10\%$ of max voltage of 3-phase voltages All phase Voltages $> 40\% V_{ref}$ All phase voltage $<$ High voltage limit (115%Vref)	$V_{max}-V_{min} < 10\%$ of max voltage of 3-phase voltages All phase Voltages $> 40\% V_{ref}$ All phase voltage $<$ High voltage limit (115%Vref)	Ist	5Min	5Min
4.	CT Reversal	$I_x > 10\% I_{basic}$ $V_x > 40\% V_{ref}$ Direction -ve Net PF > 0.2 $x=r/y/b$	$I_x > 10\% I_{basic}$ $V_x > 40\% V_{ref}$ Direction +ve Net PF > 0.2 $x=r/y/b$	IInd	5Min	5Min
5.	CT Open	$I_x \leq 2\% I_b$ Any other phases Current $> 10\% I_b$ Bypass current $> 20\%$ of I_b $V_x > 40\% V_{ref}$ $x=r/y/b$	$I_x > 5\% I_b$ Any other phases current $> 5\% I_b$ $V_x > 40\% V_{ref}$ $x=r/y/b$	IInd	5Min	5Min
6.	Current Unbalance	$(I_{max} - I_{min}) > 30\%$ of I_b All phase current $> 10\% I_b$ All phase current $<$ hi current limit (150% I_b)	$(I_{max} - I_{min}) < 10\%$ of I_b All phase current $> 10\% I_b$ All phase current $<$ hi current limit (150% I_b)	IInd	5Min	5Min
7.	Load Bypass	Bypass current $> 20\%$ of I_b No CT Open.	Bypass Current $< 10\%$ of I_b Average current $> 20mA$	IInd	5Min	5Min
8.	Low Voltage	$V_x > 20\%$ of V_{ref} $V_x < 75\% V_{ref}$ All phase voltage $<$ Neutral disturbance voltage limit (125%Vref) $x=r/y/b$	All phase voltage $> 75\% V_{ref}$ All phase voltage $<$ Neutral disturbance voltage limit (125%Vref)	Ist	5Min	5Min
9.	High Voltage	$V_x > 115\% V_{ref}$ All phase voltage $<$ Neutral disturbance voltage limit (125%Vref) $x=r/y/b$	All phase voltage $< 115\% V_{ref}$ Anyone voltage $> 40\% V_{ref}$	Ist	5Min	5Min
10.	Over current	$I_x > 150\% I_b$ $V_x > 40\% V_{ref}$ $x=r/y/b$ Not come in case of magnet	All phase current $< 150\% I_b$ Anyone voltage $> 40\% V_{ref}$	IInd	5Min	5Min



Page 1 of 2

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Tamper Thresholds

Project Code: SBQD12AA

Revision History:00

11.	Very Low PF	Net PF < 0.3 Vx > 40% Vref Ix > 1% Ib x=r/y/b	Net PF > 0.3 Vx > 40% Vref Ix > 1% Ib x=r/y/b	Illrd	5Min	5Min
12.	Neutral disturbance	Any one Phase voltage > 125%Vref	All Phases voltage < 125%Vref Any one phase voltage > 40% Vref	Illrd	5Min	5Min
13.	Top cover open	Store immediately after top cover opening	Not restore	IVth		

The first and second compartment will have 80 events (store+restore) each while the third compartment will have 40 events (store+restore).

Vref = 240 Volts

I_{max} = 10Amp

I_{basic} = 5 Amp

Revision History

Revision No.	Revision History	Date
Rev 0	Initial	28 DEC 2017

Authentication

Particulars	Prepared By	Approved By
Name	Balveer Singh	Chandan singh
Signature	Balveer Singh	Chandan singh
Date	28 DEC 2017	28 DEC 2017

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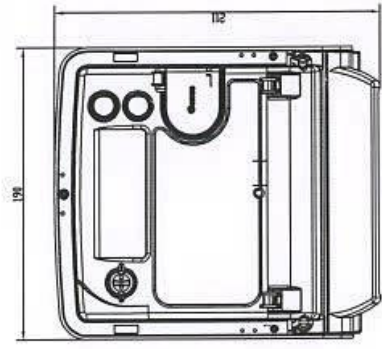
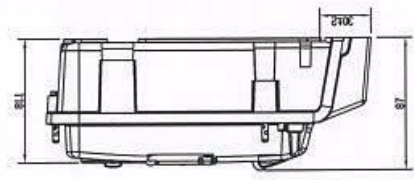
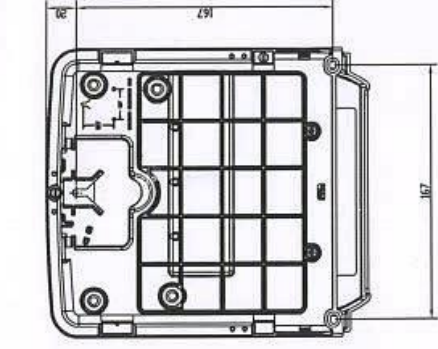
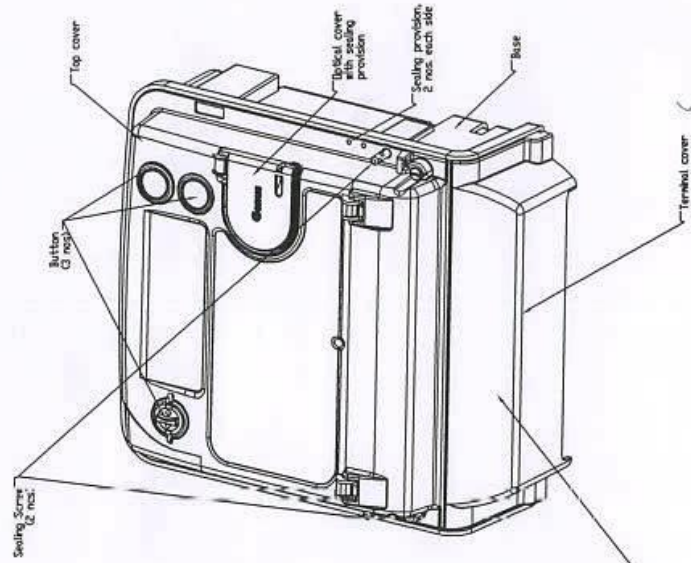
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NOTES:-
 1. GENERAL TOLERANCE: ±5% OF DIMENSION
 2. MATERIAL: POLYCARBONATE

ALL DIMENSIONS IN MM		No. OF SHEETS: 1 of 1	DATE: 25.03.15
SIGN	BC	PS	RJM
DATE	30.03.15	30.03.15	30.03.15
BY	Designed	Drawn	Checked
DESCRIPTION	3P METER GENERAL VIEW, WITH 3 BUTTON		Approved
DRAWING NO: T0747		SCALE: 1000(A3)	VOLUME: 1
REVISION: 01 2		GENUS energising lives	
PRODUCTION		GENUS POWER INFRASTRUCTURES Ltd. INDIA.	



ZONE	REV	DESCRIPTION	CR NUMBER	APPROVED	DATE
1		DESIGN CHANGED			
2		TOLERANCE UPDATED			

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