



Genus-Agrim™

(Single Phase Prepaid Meter)

Technical Specification

TECHNICAL SPECIFICATION
FOR
PRE-PAYMENT METERING SYSTEM



Genus-Agrim™

Genus Power Infrastructure Ltd.



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1. Applicable Standard: Genus-Agrim prepaid meter purports to the accuracy requirements of class 1.0 as per relevant standards of IS 13779 and latest CBIP report no 88 and SABS 1524-1, NRS 009-4-2, STS standards.

2. Unique Features of Genus-Agrim™ Prepaid Meters:

- a) **Dual Relay:** - Genus-Agrim prepaid meters have two latching relays (Phase and neutral) to protect the common tamper of phase and neutral interchanged and load is earthed.
- b) **CIU:** -Customer Interface unit uses a high-resolution graphic display, which is user friendly and provides a host of information to the consumers.

3. General Technical Specification:

The rated parameters of the meters are as mentioned below.

Rated voltage (Vref)	240 V – Phase to Neutral (Single phase two Wire system) The variation in voltage is + 20% and (-) 40%.
Rated current	Basic current 10A (Ib), Maximum current- 60 Amps (Imax.)
Reference condition	50 Hz ± 5%., 27± 2 °C
Mechanical Dimension	250 X 135 X 87 mm (H x W x D)
Weight	1500 grams

4. Type of Service and requirements of the meter:

- 4.1 The meter is suitable for Single-phase two-wire system and STS compliant.
- 4.2 Meter measures electrical energy consumed and decrements the ‘available credit register’ in accordance with the energy consumption-KWh. The ‘available credit register’ is incremented as and when payment is made to the electricity supplier (Utility). Meter continuously calculates the balance credit against the consumption.
- 4.3 As the balance credit decreases beyond the pre-defined level, a switch (latching relay) is used to disconnect the supply to the load.
- 4.4 Meter accepts the encrypted token/vending code generated by the vending machine by means of keying in the code through keypad or direct transmission of encrypted code via a communication network viz. GSM/CDMA/GPRS/PSTN. Internationally recognized standard encryption method STS is used.
- 4.5 Customer interface unit (CIU) is used to view/access the display parameters if provided.



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5. Display and storage of measured values:

- 5.1 The meter is capable to measure KWh.
- 5.2 The display unit is Pin type built-in liquid crystal display (backlit type). The information is shown by an electronic display. The size of display is 10 mm X 6 mm.
- 5.3 Meter display and store MD in KW along with date and time. The MD integration period is 30 minutes. At the end of every 30 min. the MD resetting is automatic at the end of every month i.e. 2400 hours of last day of the month.
- 5.4 Meter's memory has the following details and meter will be read through HHU / CMRI / GSM modem.
 - Last six months MD (KW) with date and time.
 - Last six months Cumulative reading history of KWh.
 - Credit entered for last six months on monthly basis.
 - Events available
 - Vend code
 - Cumulative recharge units

Parameters in auto scroll mode

- Credit left in kWh units.
- LCD test
- Current date and time
- Cumulative Kwh
- Relay status
- Tamper indication
- Communication status



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6. Customer Interface Unit (CIU)

- 6.1 Meter is supplied with Customer Interface Unit (CIU) if required, with similar keys provided in the meter. CIU is communicating with the meter by means of RS-485. CIU have built-in alarm to alert during low credit period etc.
- 6.2 Powering up of CIU is by meter.
- 6.3 Display parameters of CIU can be synchronized with Meter display both in auto-scroll mode and keypad operation mode i.e. no different parameters is be viewed at given time in meter and CIU.
- 6.4 Status of latching relay (phase and neutral), reverse tamper, magnet tamper and earth load tamper are provided on CIU display using language independent icons.

7. Output Device:

The meters have a suitable test output device for testing of meter. The blinking LED is provided. This device is suitable for use with sensing probe used with test benches or reference standards. The test output device have constant pulse rate i.e. pulse / kWh and its value (meter constant) is printed on the dial plate.

Bicolor LED for credit status: -Red means available amount is less than minimum alarm setting amount and otherwise it will be green (healthy zone).

8. Communication capabilities:

Optical port to read the meter data locally through CMRI and transfer to the main computer compatible for communicating with the AMR GSM/ CDMA / PLC modems/devices. Optical port is isolated (optically) from measurement circuit and there is not any impact on injection of any type of current & voltage signals.

9. Measurement of energy including harmonics:

The meter should measure total energy consisting of 50 Hz energy in kWh.



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10. Tamper and fraud protection:

The meter records forward energy under any abnormal condition mentioned below

Sr. No.	Condition of Tampering
1	Interchanging of incoming & outgoing wires at meter terminals.
2	Interchanging of phase & neutral terminals.
3	Incoming Neutral is disconnected and outgoing neutral is connected to earth. Load is also connected to earth.
4	Neutral at incoming and outgoing points disconnected and the load is connected between phase & earth.
5	Incoming Neutral is disconnected and Outgoing neutral connected to earth via resistor. The load connected to earth via solid earth.
6	Neutral connected on incoming side but connected to earth via resistor on outgoing side. Load is connected solidly to ground.
7	Phase & neutral interchanged at incoming and load is connected to earth.
8	Shorting is provided on current coil terminals.

The meter cover and base is suitably shielded so as to protect the meter from adverse effect of AC/DC abnormal external magnetic field. The meter meets the requirements of CBIP-88 with its latest amendment for immunity against continuous magnetic induction.

11. Disconnection Switch:

Both Phase and Neutral terminals are disconnected through latching relay to disconnect the total load in case of zero credit level. The latching relay is closed only after meter credited with sufficient amount.



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12. Functional Requirements:

All the token transactions are as per the STS specifications.

For any kind of information or discussion please feel free to contact us at

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