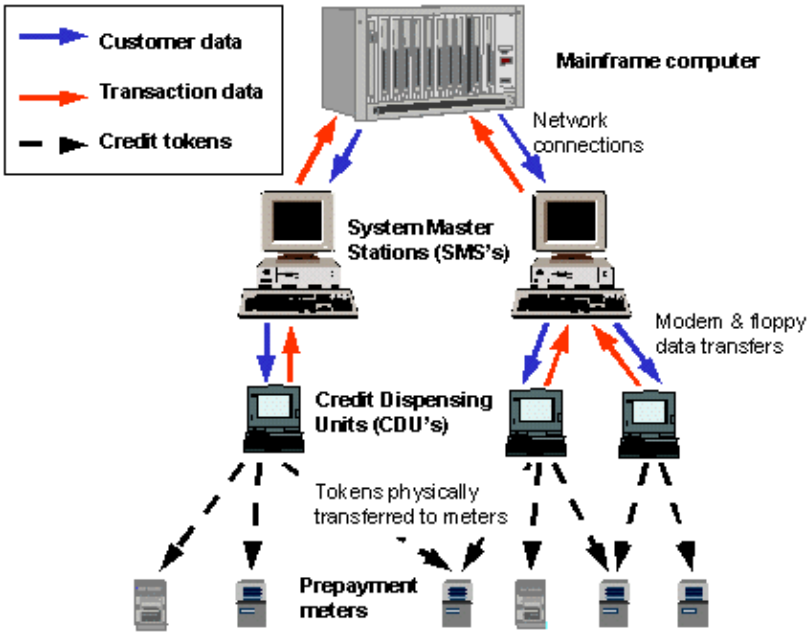
Technical Specification of the Single Phase Pre-paid Meter

General over view of the system:



General and Standards Compliance

The meters shall be of best quality and latest standard following the requirements as per the relevant IEC Standards.

Required data Sheet

Sl.No.	Description	Requirement	To be offered
1.	a. Manufacturer b. Catalogue No. c. Model offered d. Applicable standard	IEC62052-11, IEC62053-21 or equivalent	
2	Weather conditions: a. Temperature: b. Relative humidity: c. Altitude:	-5 to +55 ℃ Up to 95% Up to 2000m	
3	a. Accuracy class b. Service life the meter over which he initial accuracy is to be sustained.	Class 1.0 or better 20 years	

Sl.No.	Description	Requirement	To be offered
4	Performance with change in: a. Frequency b. Voltage	No change with variation in 5% in frequency 230V -10% to +10% in voltage	
5	Ratings and type: a. Type b. Accuracy class c. Current d. Voltage e. Short time over current for 1 sec f. Starting Current g. Burden: Voltage circuit Current circuit h. Power factor	 1-phase, 2-Wire 1.0 10(60) Amp 230V (phase to neutral) 20 x I basic <=0.4%*Ib* <=2 W / 10 VA <=0.5 VA 0.5lag	
6	Power factor range	0.5 lag 1 0.8 lead	
7	kWh register type	Solid state LCD display type	
8	Immunity to electromagnetic disturbance and compatibility	Should be unaffected	
9	Construction Casing: Cover Terminal Block Insulating materials Other features of construction Sealing Size of the terminals Over current capacity of terminals Terminal cover IP rate	 Thermo engineering plastic /polycarbonate UV stabilized molded polycarbonate Thermo engineering plastic Non-hygroscopic, non-aging As described in spec. Minimum of 2 sealable screws on the meter cover To accommodate up to 6 mm2 of A1/Cu cable 150% I_b on continuous basis. Extended type and separately sealable. IP 54	

Sl.No.	Description	Requirement	To be offered
10	Data register and display Memory Parameters to be displayed	8 digits LCD, Non Volatile Memory (NVM) Active energy (kWh), and others	
11	Tamper proof features /Indication:	Current/ Phase reversal Load earthing	
13	Connection Diagrams and terminal markings	BS standard,	
14	Starting and Running with No Load	Shall start and continue to register all parameters with 0.4% of I_b and shall not register at no-load.	

Features of the Meter:

The meter shall measure consumption of energy even at low voltage for the customers. The body and the cover of the meter shall be made from polycarbonate material which can withstand abnormal operating conditions, shocks and fire. The meter will have the capability to be programmed to calculate the consumption with

a. Step tariff system according to utility tariff.
b. Multi-tariff structure plan such as (Domestic, commercial & industrial).
c. The meter is be provided with a real time clock and calendar. The meter will maintain the real time clock to ensure a correct billing cycle.
d. The meter shall have the capability to store data and readings on a non volatile memory for at least 20 years in case of any power failure. The non volatile memory can be transferable to a new meter in case of malfunction of the current meter in use (meter black box).
e. The meter shall be designed for antifraud protection in the case of an open switching box or meter cover.
f. The meter shall have the electromagnetic compatible (EMC/EMI) which means that the meter shall be compatible with (no interference caused by) its electromagnetic (EM) environment and it does not emit levels of EM energy that cause EMI (electromagnetic interference) in other devices in the vicinity.
g. The meter shall have the capability to be programmed as follows:
    a. The tariff used,
    b. Limitation of the maximum rate of consumption. (Load limit),
    c. The reserve balance in money (local currency),
    d. The reserve balance in days (Day),
    e. The reserve balance in energy (kWh),
    f. Time and date.
h. The management software (in the vending Station) shall have the ability to check the Meter working functions such as (tariff structure, step tariff rate, relay status….etc).

i. The display screen on the meter shall have the following properties:
   a. Liquid crystal display (LCD),
   b. Contains 8 digits,
   c. The scrolling data shown on the LCD display shall be in English language.

j. The meter shall display the following data on the LCD screen:
   a. The total consumption,
   b. The previous month's consumption,
   c. The current month's consumption,
   d. Remaining credit by kWh,
   e. Remaining credit by money (currency),
   f. Remaining credit by period (Days),
   g. The reserve credit by kWh,
   h. The reserve credit by money (currency),
   i. The reserve credit by period (days),
   j. Time and date,
   k. The rate of consumption through separate LED.

k. The meter shall have the ability to calculate the total consumption and also the average consumption per month.

l. The meter shall give a visual and an audible alarm to the customer when it reaches the reserve limit.

m. The built in latch relay shall be used to disconnect the meter in case of fraud detection will be inside the meter.

n. The meter shall indicate the tamper date and time stamp the event.

o. The relay's life time shall be minimum 20 years or 100,000 times (ON/OFF).

p. The meter shall have an Over load Protection function that could be programmable by the smart card.

q. The meter shall have the ability to trip on a programmable load limit within the current range.

r. The meter shall dispense credit according to the implemented tariff at the meter and not at the vending station.

s. The meter should be configured so that it can be routinely inspected by an inspector's smart card and vending station software.